setting and information (e.g., number and type of equipment, amount of material transport) provided by DWR. The modeled maximum daily construction emissions are summarized in Table 3-1 and described in more detail below and in Appendix A.

Table 3-1
Summary of Modeled Maximum Short-Term Construction-Generated Emissions

Source	ROG (tons per year)	NO_X (tons per year)	PM_{10} (pounds/day)
L3.9 and L4.2 Levee Construction (2009)			
Mobile Equipment Exhaust [1]	0.2	1.7	4
Fugitive Dust	-	-	10
Total Maximum Unmitigated	**0.2**	**1.7**	**14**
YSAQMD Significance Threshold	**10**	**10**	**80**

[1] Accounts for employee commute trips, on-site heavy-duty construction equipment, and material transport (e.g., soil and aggregate base).
See Appendix A for modeling results and assumptions.
Source: Data Modeled by EDAW 2008

Based on the modeling conducted, levee construction would result in worst-case maximum unmitigated annual emissions of approximately 0.2 tons per year (tpy) of ROG, 1.7 tpy of NO_X, and daily emissions of 14 lb/day of PM_{10}. Thus, construction-generated emissions would not violate an air quality standard set by the YSAQMD and therefore would not contribute substantially to an existing or projected air quality violation, or expose sensitive receptors to substantial pollutant concentrations. In addition, short-term emissions would not result in a cumulatively considerable net increase of criteria pollutants for which the project region is non-attainment under an applicable federal or State ambient air quality standard or conflict with or obstruct implementation of the applicable air quality plan. As a result, this temporary impact is considered less than significant.

Long-Term Operational (Regional) Emissions

Less-than-Significant Impact. As discussed below under section XV, "Traffic and Circulation," the long-term operation of the project would not cause a significant increase in vehicle traffic on the local roadway system. Thus, operation of the project would not increase long-term regional ROG, NO_X, and PM_{10} or local CO emissions associated with increases in mobile sources. In addition, implementation of the project would not increase VMT and, consequently, would not conflict with or obstruct implementation of YSAQMD's air planning efforts. Furthermore, construction of the project would not result in the operation of any major stationary emission sources. Thus, long-term operational emissions would not violate an air quality standard, contribute substantially to an existing or projected air quality violation, or expose sensitive receptors to substantial pollutant concentrations. In addition, operational emissions would not result in a cumulatively considerable net increase of criteria pollutants for which the project region is non-attainment under an applicable federal or State ambient air quality standard or conflict with or obstruct implementation of the applicable air quality plan. As a result, this impact is considered less than significant.

d) Expose sensitive receptors to substantial pollutant concentrations?

Less-than-Significant Impact. Construction of the project would result in short-term diesel exhaust emissions from on-site heavy-duty equipment. Particulate exhaust emissions from diesel-fueled engines (diesel PM) were identified as a toxic air contaminant (TAC) by ARB in 1998. Construction of the project would generate diesel PM emissions from the use of off-road diesel equipment required for site grading and excavation, and other construction activities. The dose to which the receptors are exposed (a function of concentration and duration of

exposure) is the primary factor used to determine health risk (i.e., potential exposure to TAC emission levels that exceed applicable standards). According to the Office of Environmental Health Hazard Assessment (OEHHA), health risk assessments, which determine the exposure of sensitive receptors to TAC emissions, should be based on a 70-year exposure period; however, such assessments should be limited to the period/duration of activities associated with the action (Salinas, pers. comm., 2004). Thus, because of the dispersive properties of diesel PM (Zhu and Hinds 2002) and the temporary nature (less than 2 months) of the mobilized equipment use, short-term construction-generated TAC emissions would not expose sensitive receptors to substantial pollutant concentrations. As a result, this temporary impact is considered less than significant.

e) Create objectionable odors affecting a substantial number of people?

Less-than-Significant Impact. Construction of the project would result in diesel exhaust emissions from on-site construction equipment. The diesel exhaust emissions would be intermittent and temporary and would dissipate rapidly from the source with an increase in distance. In addition, no existing odor sources are located in the vicinity of the proposed project site and the project would not include the long-term operation of any new sources. Thus, the operation of the project would not create, further, or change existing objectionable odors that would affect a substantial number of people. As a result, this temporary impact is considered less than significant.

BIOLOGICAL RESOURCES

	THRESHOLDS OF SIGNIFICANCE	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
IV.	**Biological Resources. Would the project:**				
a)	Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or the U.S. Fish and Wildlife Service?	☐	☒	☐	☐
b)	Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the California Department of Fish and Game or the U.S. Fish and Wildlife Service?	☐	☒	☐	☐
c)	Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☒	☐
d)	Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☒	☐
e)	Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☒	☐
f)	Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State habitat conservation plan?	☐	☐	☐	☒

This section describes the existing conditions of biological resources within the project site, potentially significant effects from implementation of the proposed project, and mitigation, if necessary, to reduce potentially significant effects of the proposed project.

ENVIRONMENTAL SETTING

Information on biological resources of the project site is based on a review of pertinent literature and databases, including the Cache Creek North Levee Setback Project IS/EA – Critical Erosion Sites 1 and 2 (DWR 2006a) and Cache Creek North Levee Setback Project IS/EA – Critical Erosion Site 3 (DWR 2006b), and surveys conducted at the project site by EDAW biologists on September 25, 2008. The surveys included a reconnaissance-level investigation of the project site and a protocol-level elderberry shrub (*Sambucus mexicana*) survey. The purposes

of these surveys were to characterize biological resources present on the project site and to determine the potential for sensitive biological resources to occur on the project site.

The project site is located on the landside of the north levee of Cache Creek southeast of the town of Yolo where County Road 99A approaches Cache Creek. Elevations on the project site range from 75 to 80 feet above mean sea level. Topography in the vicinity of the project site is flat except for the bed of Cache Creek, which lies approximately 40 feet below the level of surrounding lands. Agricultural fields are present on the northwest half of the site, and a small orchard is present on the southeast corner of the site. Southeast of the agricultural fields, a fence and utility poles extend east to west. Between the fence, the existing levee and the orchard lies a triangular-shaped field that in the past has been used to grow hay or exercise horses. On the waterside of the existing levee, remnant patches of Great Valley oak (*Quercus lobata*) riparian forest grow on the upper banks of the creek. Lands to the north of the project site are characterized by agricultural fields and walnut orchards. A residence and horse barns are present immediately adjacent to the project site's east boundary.

Habitats present on the project site include row-crop agricultural lands, a walnut orchard, landscaped areas, and ruderal vegetation. The agricultural fields were disced and fallow at the time of the site visit. The triangular-shaped field was fallow, but included ruderal vegetation such as Bermuda grass (*Cynodon dactylon*), ripgut (*Bromus diandrus*), soft chess (*Bromus hordeaceus*), shortpod mustard (*Hirschfeldia incana*), knotweed (*Polygonum arenastrum*), horseweed (*Conyza canadensis*), and prickly lettuce (*Lactuca serriola*). The slopes of the existing levee had been burned recently during routine levee maintenance and were therefore unvegetated at the time of the site survey. Local wildlife species observed that are characteristic of row crop agricultural and ruderal habitats include California ground squirrel (*Spermophilus beecheyi*), desert cottontail (*Sylvilagus audubonii*), killdeer (*Charadrius vociferous*), red-tailed hawk (*Buteo jamaicensis*), house finch (*Carpodacus mexicanus*), and house sparrow (*Passer domesticus*).

Great Valley oak riparian forest occurs on the banks of Cache Creek adjacent to the project site. This vegetation community is characterized by valley oak, northern California black walnut (*Juglans hindsii*), California wild rose (*Rosa californica*), blue elderberry (*Sambucus mexicanus*), and tree tobacco (*Nicotiana glauca*). Areas closer to the creek bed are dominated by tamarisk (*Tamarix* sp.), giant reed (*Arundo donax*), Fremont's cottonwood (*Populus fremontii*), willow (*Salix* spp.), and California grape (*Vitis californica*). Common riparian-associated wildlife species that were observed during the reconnaissance surveys include American mink (*Mustela vison*), northern flicker (*Colaptes auratus*), black phoebe (*Sayornis nigricans*), ruby-crowned kinglet (*Regulus calendula*), red-shouldered hawk (*Buteo lineatus*), western scrub-jay (*Aphelocoma californica*), and belted kingfisher (*Ceryle alcyon*). The riparian vegetation is separated from the project site by a dirt road at the toe of the existing levee and a strip of ruderal vegetation characterized by yellow star thistle (*Centaurea solstitialis*), wild oat (*Avena fatua* and *Avena barbata*), ripgut, soft chess, milk thistle (*Silybum marianum*), black mustard (*Brassica nigra*), salt grass (*Distichlis spicata*), and Russian thistle (*Salsola tragus*).

Sensitive Biological Resources

Sensitive biological resources include plants, animals, and habitats that have been afforded special recognition by federal, State, or local resource agencies and organizations. Also included are habitats that are of relatively limited distribution or are of particular value to wildlife. Searches of the California Department of Fish and Game (DFG) California Natural Diversity Database (CNDDB 2008a) and the California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants (CNPS 2008) were conducted to identify sensitive resources previously documented in the vicinity of the project site. The searches included the Zamora, Eldorado Bend, Knight's Landing, Madison, Woodland, Gray's Bend, Winters, Merritt, and Davis U.S. Geological Survey 7.5-minute quadrangles. EDAW biologists reviewed these database searches and existing conditions on the project site to develop a list of special-status species with potential to occur on or in the vicinity of the project site. An EDAW fisheries biologist was consulted to develop a list of special-status fish species with potential to occur in Cache Creek. Additional background information on special-status species was obtained by reviewing a recently completed biological field survey document covering the project site (DWR 2005) and a technical document

prepared for the Cache Creek Resource Management Plan (CCRMP) planning process (Yolo County Community Development Agency 1995).

Special-Status Species

Special-status species include those that are State-listed and/or federally listed as threatened or endangered; those considered as candidates for listing as threatened or endangered; those identified by the USFWS and/or DFG as species of concern and species of special concern, respectively; and animals identified by DFG as fully protected. Special-status plant species include those on CNPS Lists 1A (plants presumed extinct in California), 1B (plants rare, threatened, or endangered in California and elsewhere), or List 2 (plants rare, threatened, or endangered in California but more common elsewhere).

All raptors are protected under Section 3503.5 of the California Fish and Game Code, which prohibits take or destruction of raptors, including their nests and eggs. Raptors species that could nest and forage within the project site include Swainson's hawk, Cooper's hawk, American kestrel, red-tailed hawk, northern harrier, white-tailed kite, great horned owl, and burrowing owl. Sharp-shinned hawk could also forage in the project area, but does not nest in Yolo County.

Special-Status Plant Species

Nine special-status plant species were identified in the CNDDB and CNPS searches as occurring in the project vicinity. Seven of these species occur in mesic areas (vernal pools) and/or in alkaline soils, one of the species occurs in freshwater marsh, and one occurs in valley and foothill grassland habitats. EDAW biologists determined that these nine species do not have the potential to occur on the project site due to the absence of suitable habitat for these species. A tenth species, northern California black walnut, has two forms: 1) a rare form with pure northern California black walnut genotype; and 2) a common hybrid form resulting from hybridization with English walnut (*Juglans regia*). The rare form of California black walnut is not known from the project vicinity and is not expected to occur on the project site. More detailed descriptions of these special-status plant species are provided below in Table 3-2.

Table 3-2
Special-Status Plants Known from the Vicinity of the Project Site

Species	Status[1]			Habitat and Blooming Period	Potential for Occurrence
	USFWS	DFG	CNPS		
Alkali milkvetch *Astragalus tener* var. *tener*		--	1B	Playas and vernal pools in valley and foothill grassland, alkali flats and flooded lands; from 0 to 60 meters in elevation. Blooms March – June	Not expected to occur on the project site, as no suitable habitat is present.
Heartscale *Atriplex cordulata*		--	1B	Saline or alkaline soils in meadows, chenopod scrub, alkaline flats and scalds, sandy soils in valley and foothill grassland; from 1 to 375 meters in elevation. Blooms April – October	Not expected to occur on the project site, as no suitable habitat is present.
Brittlescale *Atriplex depressa*		--	1B	Alkali scalds or playas alkaline clay soils in chenopod scrub, meadows, and valley and foothill grassland, rarely associated with riparian, marshes, or vernal pools; from 1 to 320 meters in elevation. Blooms May – October	Not expected to occur on the project site, as no suitable habitat is present.

Table 3-2
Special-Status Plants Known from the Vicinity of the Project Site

Species	Status[1]			Habitat and Blooming Period	Potential for Occurrence
	USFWS	DFG	CNPS		
San Joaquin spearscale *Atriplex joaquiniana*		--	1B	Alkali meadow, chenopod scrub, seeps in valley and foothill grassland, often in seasonal alkali wetlands or alkali sink scrub; from 1 to 835 meters in elevation. Blooms April – October	Not expected to occur on the project site, as no suitable habitat is present.
Palmate-bracted bird's beak *Cordylanthus palmatus*	E	E	1B	Chenopod scrub, alkaline areas in valley and foothill grassland, usually on Pescadero silty clay which is alkaline; from 5 to 155 meters in elevation. Blooms May – October	Not expected to occur on the project site, as no suitable habitat is present.
Round-leaved filaree *Erodium macrophyllum*	--	--	2	Cismontane woodland, valley and foothill grassland; from 15 to 1200 meters in elevation. Blooms March – May	Not expected to occur on the project site, as no suitable habitat is present.
Rose-mallow *Hibiscus lasiocarpus*	--	--	2	Freshwater marshes and swamps, generally found on wetted river banks and low peat islands in sloughs, known from the Sacramento-San Joaquin Delta watershed; from 0 to 120 meters in elevation. Blooms June – September	Not expected to occur on the project site, as no suitable habitat is present.
Northern California black walnut *Juglans californica* var. *hindsii*	FSC	--	1B	Riparian scrub, riparian woodland; from 0 to 440 meters in elevation. Blooms April – May	Northern California black walnut trees were encountered during the site visits; however, these are likely to be hybrids between *Juglans hindsii* and *Juglans regia*. The pure form of this variety is not known from the project vicinity and is not expected to occur on the project site.
Heckard's peppergrass *Lepidium latipes* var. *heckardii*		--	1B	Alkaline soils at edges of vernal pools or in valley and foothill grassland; from 3 to 200 meters in elevation. Blooms March – May	Not expected to occur on the project site, as no suitable habitat is present.
Baker's navarretia *Navarretia leucocephala* ssp. *bakeri*		--	1B	Vernal pools, swales, meadows, and seeps in cismontane woodland, lower montane coniferous forest, and valley and foothill grassland, on adobe or alkaline soils, from 5 to 1740 meters in elevation. Blooms April – July	Not expected to occur on the project site, as no suitable habitat is present.

Legal Status Definitions

U.S. Fish and Wildlife Service (USFWS)

E Endangered

FSC Federal Species of Concern

California Department of Fish and Game (DFG)

E Endangered

California Native Plant Society (CNPS) Categories

1B Plant species considered rare, threatened, or endangered in California and elsewhere

2 Plant species considered rare, threatened, or endangered in California but more common elsewhere

Source: CNDDB 2008, CNPS 2008

Special-Status Wildlife Species

Ten special-status wildlife species were obtained from USFWS (USFWS 2008) within Quad 514A (Woodland). In addition, six special-status wildlife species were identified in the CNDDB searches as occurring within 5 miles of the project site (Exhibit 3-3). An additional 5 special-status species were considered for analysis because of their association with the habitat types surrounding the project site (Table 3-3). Of the 21 species considered, 9 have potential to occur on or adjacent to the project site. Suitable habitat for special-status vernal pool species such as vernal pool tadpole shrimp (*Lepidurus packardi*), vernal pool fairy shrimp (*Branchinecta lynchi*), and California tiger salamander (*Ambystoma californiense*) does not exist within or adjacent to the project site; therefore, these species will not be discussed further.

Valley Elderberry Longhorn Beetle. Valley elderberry longhorn beetle is federally listed as threatened. This species requires blue elderberry shrubs for reproduction and survival. Five blue elderberry shrubs, or clusters of shrubs, are present on or adjacent to the project site (Exhibit 3-4). All five shrubs contain stems measuring greater than 1.0 inch or greater in diameter when measured at ground level and thus have the potential to support valley elderberry longhorn beetle.

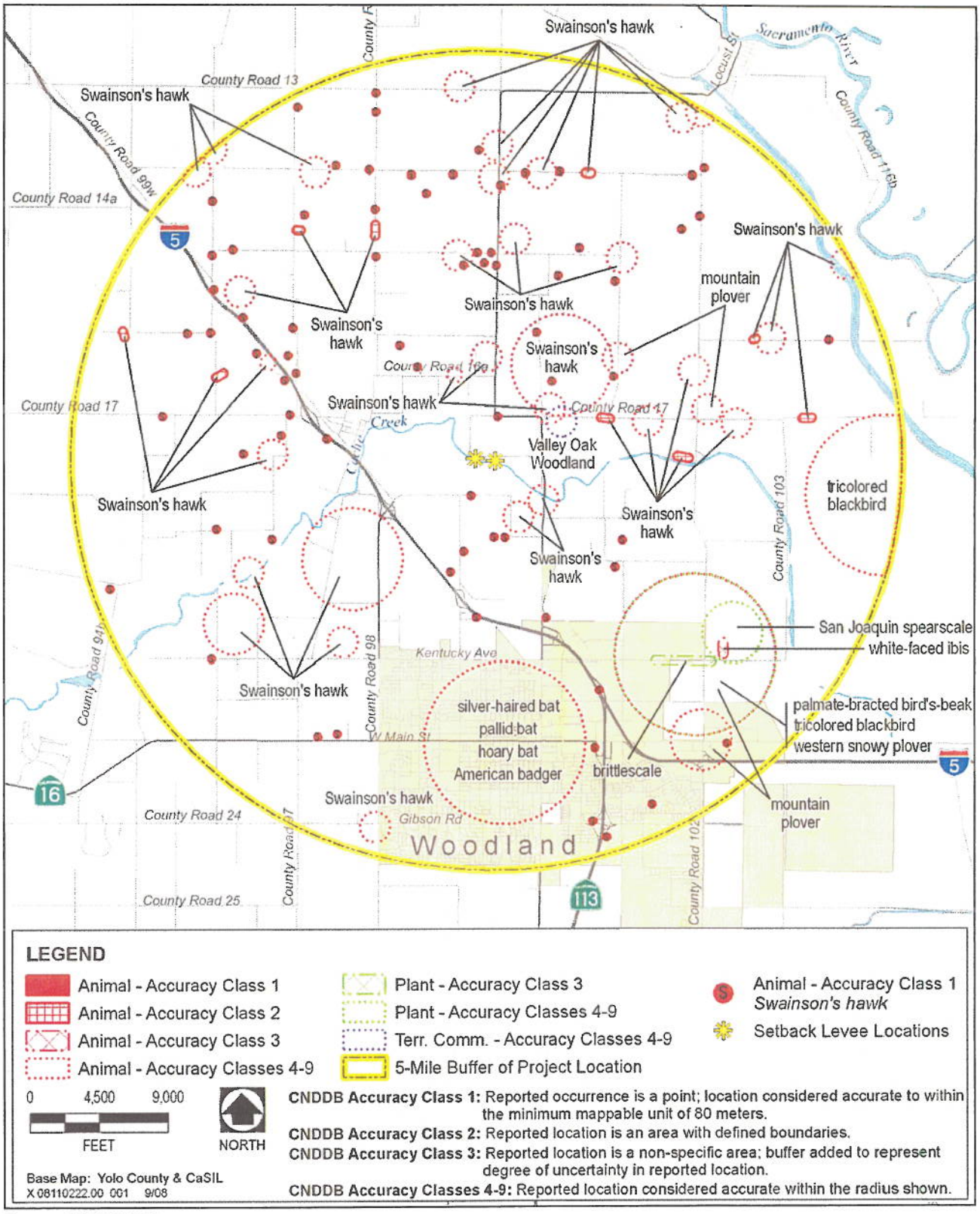
Special-Status Fish Species. Historically, Cache Creek supported a diverse population of native fish species including several species that are currently designated as special-status (including Chinook salmon and steelhead). Currently, the anadramous fish population of Cache Creek is limited due to habitat degradation (e.g., temperature and flow) and upstream and downstream migration barriers. The Cache Creek settling basin and several check dams and culverts throughout the Yolo Bypass and all located downstream of the project site prevent migration into the project area except under exceptional conditions during extreme high Yolo Bypass flows.

American Badger. The American badger is a California species of special concern. This species inhabits a variety of grassland, shrub-steppe, and wooded habitats with friable soils. One badger occurrence has been documented by CNDDB within 5 miles of the project site. Although no badger burrows were observed during the reconnaissance surveys, suitable habitat for badger is present on the project site along the existing levee and along the hedgerow. The riparian habitat along Cache Creek is also potentially suitable for this species.

Swainson's Hawk. Swainson's hawk is State-listed as threatened. This species nests in large trees such as oak and cottonwood and forages in grasslands, low shrublands, and fields of short agricultural crops, such as alfalfa and tomato. The Swainson's hawk breeding season is defined by DFG as March 1 through September 15. No Swainson's hawks were observed on the project site by EDAW biologists during this September 2008 field survey. In the last 5 years, 79 Swainson's hawk nesting occurrences have been recorded by CNDDB within 5 miles of the project site. The nearest Swainson's hawk nests are approximately 0.5 mile from the project site. The project area provides potential foraging habitat for this species. Trees bordering the agricultural fields and in the adjacent riparian habitat along Cache Creek provide suitable nest sites for this species.

White-tailed Kite. White-tailed kite is a fully protected species under California law. It nests in trees such as oak and cottonwood and forages in grasslands, low shrublands, and fields of short agricultural crops, such as alfalfa and tomato. This species inhabits the Central Valley throughout the year. No white-tailed kite nesting occurrences have been recorded by CNDDB within 5 miles of the project site. No white-tailed kites were observed during the September 2008 reconnaissance survey. White-tailed kites could use the project site, however, as it provides suitable nesting and foraging habitat.

Burrowing Owl. Burrowing owl is a California species of special concern. The CNDDB does not document any burrowing owls within 5 miles of the project site. Owls were not observed during EDAW's September 2008 reconnaissance survey; however, potential habitat is present. Burrowing owls typically nest and roost in burrows created by fossorial animals, such as ground squirrels, which are present but not abundant on the project site. Burrowing owls commonly forage in agricultural habitats similar to those on the project site.



Source: CNDDB 2008b

CNDDB Search of Project Area **Exhibit 3-3**

Table 3-3
Special-Status Wildlife with Potential to Occur on or Adjacent to the Project Site

Species	Status[1] USFWS	Status[1] DFG	Habitat	Potential for Occurrence
Invertebrates				
Valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	T	--	Elderberry shrubs, primarily in riparian woodlands.	Occurs year-round; elderberry shrubs are present within 100 feet of the project site.
Fish				
Delta smelt *Hypomesus transpacificus*	T	T	Inhabit a wide range of salinity and typically rear in shallow, fresh or slightly brackish waters.	Unlikely to occur in this segment of Cache Creek due to limited fish passage downstream.
Central Valley steelhead *Oncorhyncus mykiss*	T	--	Requires cold, freshwater streams with suitable gravel for spawning.	Unlikely to occur in this segment of Cache Creek due to limited fish passage downstream.
Sacramento winter-run Chinook salmon *Oncorhyncus tshawytscha*	E	E	Requires cold, freshwater streams with suitable gravel for spawning.	Unlikely to occur in this segment of Cache Creek due to limited fish passage downstream.
Central Valley spring-run Chinook salmon *Oncorhyncus tshawytscha*	T	T	Requires cold, freshwater streams with suitable gravel for spawning.	Unlikely to occur in this segment of Cache Creek due to limited fish passage downstream.
Amphibians				
California red-legged frog *Rana Aurora*	T	SSC	deep water ponds with overhanging vegetation	Not expected to occur in the study area. No CNDDB records within 5 miles of the project site and no suitable habitat on or adjacent to the site.
Reptiles				
Giant garter snake *Thamnophis gigas*	T	T	Inhabits slow-moving streams, sloughs, ponds, marshes, flooded rice fields, and irrigation and drainage ditches with mud substrate, emergent aquatic vegetation, protected basking areas, and access to upland hibernaculae above the high-water line.	Not expected to occur; no known occurrences exist within 5 miles of the project area. Cache Creek does not provide suitable habitat. The creek bottom consists of gravel and sand, emergent aquatic vegetation is absent, and 40-foot vertical banks preclude snake access to upland habitats. No irrigation ditches or other waterways are present on the project site.
Mammals				
Pallid bat *Antrozous pallidus*	--	SSC	Inhabits a variety of habitats, including grasslands, shrublands, woodlands, and forests from sea level up through mixed coniferous forests. Associated with oak woodlands at lower elevations and may roost in a variety of places including tree cavities, rock crevices, and man-made structures.	Unlikely to occur; no roosting habitats (e.g., man-made structures or tree cavities) are present on or adjacent to the project site.